

a program code for the calculation step of calculating a next pitch mark position from a pitch mark position calculated immediately before the calculation, a pitch mark distance to an adjacent pitch mark, and the distance and difference loaded in said first and second loading steps.

REMARKS

The claims now pending in this application are Claims 1-19, with Claims 1, 2, 4, 6, 9, 10, 12, 14, and 17-19 being the independent claims. No claims have been amended, cancelled or added. Claims 2, 4-8, 10, 12-16, 18, and 19 are allowed.

Independent Claim 1 is directed to speech synthesis apparatus for synthesizing speech by using pitch marks. The apparatus comprises a first calculation means, a second calculation means, and a management means. The first calculation means is for calculating a distance between two pitch marks of a voiced portion of speech data to be processed. The second calculating means is for calculating a difference between adjacent inter-pitch-mark distances. The management means is for storing the calculation results obtained by the first and the second calculation means in a file and managing the results.

The cited art, U.S. Patent No. 5,890,118 (Kagoshima, et al.), is directed to a speech synthesis apparatus that interpolates between typical waveforms read from a memory means to obtain a plurality of interpolation signals each having at least one of an interpolation pitch period and a signal level which changes smoothly between corresponding frames.

However, Kagoshima, et al. fails to disclose or suggest the above-described features of the present invention.

First, Applicants respectfully submit that the present invention is fundamentally distinct from the Kagoshima, et al. patent. The present invention records actually existing pitch marks from voiced portions of speech data. In contrast, Kagoshima, et al. generates pitch marks by, for example, calculating pitch marks m_0 - m_5 (See Figure 4 and column 5, line 24 to column 8, line 31).

Insofar as the present invention and Kagoshima, et al. utilize two entirely different techniques (recording of actually existing pitch marks versus generation of pitch marks), Applicants submit that the present invention clearly overcomes the cited art.

Secondly, Applicants, without conceding the propriety of comparing the present invention to Kagoshima, et al., respectfully submit that Kagoshima, et al. in no way discloses or suggests a first calculation means for calculating a distance between a first two pitch marks of a voiced portion of speech data to be processed, as disclosed and claimed in the present invention.

In the Official Action, dated May 3, 2002, the Examiner asserts that the Kagoshima, et al. reference calculates the distance between two pitch marks and cites column 6, lines 61-67 to support this contention. The cited text describes "the first pitch period information 101" and "the second pitch period information 302". However, Applicant's submit that the first and second pitch period information are not equivalent to the distance between two pitch marks.

Indeed, Figures 4 and 6 of the Kagoshima, et al. patent do denote pitch marks m_0 - m_5 and a distance between a first two pitch marks, m_0 and m_1 , as T_0 . However, the Kagoshima, et al. fails to specify how to calculate this distance between pitch marks, T_0 .

In another aspect, Kagoshima, et al. and the present invention differ in that Kagoshima, et al. is providing input values while the present invention is providing output

values. The Kagoshima, et al. patent calculates a pitch mark, m_k , and uses it as an input for a waveform processing section 23 (see Figure 2). In contrast, the present invention calculates and outputs the distance between pitch marks, d_1 .

Thirdly, Applicants, respectfully submit that Kagoshima, et al. in no way discloses or suggests second calculation means for calculating a difference between adjacent inter-pitch-mark distances.

In the Official Action, dated May 3, 2002, the Examiner asserts that the Kagoshima, et al. reference calculates the distance between two pitch marks, citing column 7, lines 1-13. The pitch interpolation section 32, cited therein, performs pitch interpolation and the interpolation position determining section 31 determines interpolation positions. However, there is no calculation of $T_k - T_{(k-1)}$, which is the difference between adjacent inter-pitch-mark distance. Therefore, Applicants respectfully submit that Kagoshima, et al. does not disclose the second calculation means of the present application.

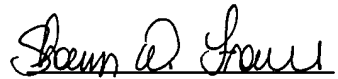
For the aforementioned reasons, Claim 1 is allowable over the cited art. Independent Claims 9 and 17 relate to a control method and a computer-readable memory storing program codes, respectively, and are allowable for similar reasons.

The dependent Claims 3 and 11 depend from Claims 1 and 9, respectively, and are believed allowable for the same reasons. Moreover, each of these dependent claims recite additional features in combination with the features of their respective independent claims and is believed allowable in its own right. Individual consideration of the dependent claims respectfully is requested.

Favorable consideration of the claims and early passage to issue of the present application earnestly are solicited.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,


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